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IS/ISO 105-C07 (1999): Textiles - Tests for colour fasteness : Part C07 Colour fasteness to wet scrubbing of pigment textiles (superseding IS 11908) [TXD 5: Chemical Methods of Test]

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भाग C07 ब्रश से गीला रगड़ने पर वर्णक मुद्रित वस्त्रादि के रंग का पक्कापन

Indian Standard

TEXTILES — TESTS FOR COLOUR FASTNESS

PART C07 COLOUR FASTNESS TO WET SCRUBBING OF PIGMENT TEXTILES

ICS 59.080.01

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

July 2009 Price Group 3

Chemical Methods of Test Sectional Committee, TXD 05

NATIONAL FOREWORD

This Indian Standard (Part C07) which is identical with ISO 105-C07 : 1999 'Textiles — Tests for colour fastness — Part C07: Colour fastness to wet scrubbing of pigment printed textiles' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Chemical Methods of Test Sectional Committee and approval of the Textile Division Council.

This standard supersedes IS 11908 : 1986 'Method for determination of colour fastness of textile fabrics to wet scrubbing'.

Colour fastness of dyed/printed textile materials to various agencies during their further treatment or actual use is an important performance requirement from the viewpoint of the user or consumer. The various agencies to which textile materials may be subsequently subjected may include water, acids, alkalis, organic solvents, washing, laundering, drycleaning, perspiration, light, gaseous fumes, bleaching, rubbing, carbonizing, felting, etc and the colour of textile materials should be fast to these agencies and should not change considerably. The colour should also not bleed and stain the adjacent fabrics which are subjected to these agencies along with coloured fabrics. The colour fastness property of coloured textiles is, therefore, measured in terms of colour fastness ratings with respect to change in colour and/or staining of adjacent fabrics.

Since colour fastness is one of the most important requirement for export of textiles, it is considered essential that Indian Standards related to colour fastness are completely harmonized with International Standards. The various Indian Standards on colour fastness testing, are, therefore, being revised to align them with the corresponding International Standardsand are being published in Parts A to Z.

This standard is intended to test colour fastness of textile materials to domestic or commercial laundering procedures used for normal household articles. Industrial and hospital articles may be subjected to social laundering procedures which may be severe in some respects.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker in the International Standards, while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 105-A01 : 1994 Textiles — Tests for colour fastness — Part A01: General principles of testing	IS/ISO 105-A01 : 1994 Textiles — Tests for colour fastness: Part A01 General principles of testing	Identical
ISO 105-A02 : 1993 Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour	IS/ISO 105-A02 : 1993 Textiles — Tests for colour fastness: Part A02 Grey scale for assessing change in colour	do

(Continued on third cover)

Indian Standard

TEXTILES — TESTS FOR COLOUR FASTNESS

PART C07 COLOUR FASTNESS TO WET SCRUBBING OF PIGMENT TEXTILES

1 Scope

This part of ISO 105 describes a method for determining the colour fastness to wet scrubbing of pigment dyed or pigment printed textiles of all kinds.

The test is not applicable to loose fibres.

2 Normative references

The following standards contains provisions which, through reference in this text, constitute provisions of this part of ISO 105. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this part of ISO 105 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 105-A01:1994, *Textiles — Tests for colour fastness — Part A01: General principles of testing.*

ISO 105-A02:1993, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour.*

ISO 105-C01:1989, *Textiles — Tests for colour fastness — Part C01: Colour fastness to washing: Test 1.*

ISO 105-C06:1994, *Textiles — Tests for colour fastness — Part C06: Colour fastness to commercial and industrial laundering.*

3 Principle

The test specimen is immersed in a soap solution or detergent solution, scrubbed for a specified time with a brush then rinsed and dried. The change in colour of the test specimen is assessed using the grey scale.

4 Apparatus and reagents

4.1 Testing device, consisting of a means of wet scrubbing, moving to and fro in a straight line along a 100 mm ± 10 mm track on the test specimen with a force of 9,0 N ± 0,2 N, with approximately one complete to and fro cycle per second. The base board of the device is large enough to clamp on a test specimen of not less than 80 mm × 250 mm.

4.2 Brush, consisting of five rows with 13 tufts or 14 tufts per row each with 16 stiff polyamide bristles of 0,36 mm per tuft. The tufts are cut to a uniform length of 15 mm and the distance between tufts is 4 mm. The brush permits a width of scrubbing of 55 mm ± 2 mm. Other brushes similar to the brush described above may be used as long as there is agreement between interested parties and the particular brush used is reported.

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New brushes shall be blunted before use by scrubbing the brush for at least 100 cycles using abrasive or cloth paper (see note 2). If necessary repeat until the brush surface is perfectly aligned with the abrasive or cloth paper on the base board. Depending on the brush used, a residue may be noticed on the abrasive paper.

NOTE 1 A brush complying with following requirements has been found suitable:

Linear density (of fibre): 102,8 dtex

Tensile strength (of fibre): 0,032 5N (cv 4,33 %)

Breaking elongation (of fibre): 6,9 % (cv 12,8 %)

Modulus of elasticity (of fibre): 0,002 2 N/dtex

Press capability (of brush): 2,44 kg (cv 8 %)

Pull out from brush (tuft): 14,2 N (cv 18 %)

Pull out from brush (single fibre): 0,8 N (cv 38 %)

where cv is the coefficient of variation.

NOTE 2 Abrasive paper of 120 mesh (0 #) black aluminium oxide cloth has been found suitable. If other abrasive paper is used, it should be reported.

4.3 Soap, without optical brightener, as specified in 4.2 of ISO 105-C01:1989.

4.4 Sodium perborate.

4.5 Reference detergent.

At least two different reference detergents may be used:

a) **ECE reference detergent 77**, without optical brightener, or

b) **1993 AATCC standard reference detergent WOB**.

Both are specified in 4.4 of ISO 105-C06:1994.

Other detergents may be used as agreed between interested parties and reported in the test report.

4.6 Grey scale, for assessing change in colour, complying with ISO 105-A02:1993.

4.7 Grade 3 water, see 8.1 of ISO 105-A01:1994.

5 Test specimen

5.1 If the textile to be tested is a fabric, prepare one specimen not less than 80 mm × 250 mm, with the long direction parallel to the warp yarns (or the direction of manufacture). If multicoloured textiles are to be tested and all colours on the textile cannot be included in one specimen, prepare further test specimens and assess each colour separately.

5.2 If the textile to be tested is yarn or thread, knit it into fabric to provide a specimen at least 80 mm × 250 mm. The knit construction should be agreed on between the interested parties. Alternatively, the yarn can be wound on a plastic plate. The construction chosen can influence test results.

6 Procedure

Dissolve 5 g of soap (4.3) and 2 g sodium perborate (4.4) in 1 l of water (4.7); or dissolve 4 g detergent A (4.5) together with 1 g sodium perborate (4.4) or 4 g detergent B (4.5) in 1 l of water(4.7).

Pour about 250 ml of the prepared soap solution or about 250 ml prepared detergent solution into a 500 ml beaker, so that the ratio of solution to specimen is not less than 50:1. Raise the temperature of the solution to one of the alternatives given below and indicate the alternative selected in the test report.

Alternative soap or detergent solution temperatures:

- 27 °C ± 3 °C
- 41 °C ± 3 °C
- 49 °C ± 3 °C
- 60 °C ± 3 °C
- 70 °C ± 3 °C

Immerse the specimen in the solution for 1 min until thoroughly wetted, then remove the specimen and squeeze off the excess solution with two glass rods or other suitable means. Place the squeezed specimen on the baseboard of the testing device (4.1) and fasten it on two ends by clamps or other means, depending on the test device used so that the long direction of the specimen follows the track of the device. Keep fastened during scrubbing. Lay the brush (4.2) on the specimen and allow it to scrub to and fro along a 100 mm ± 10 mm track either 25 cycles, 50 cycles or 100 cycles with a force of 9,0 N ± 0,2 N. To keep the specimen wet, add approximately 10 ml soap solution or 10 ml detergent solution to the specimen after every 25 times scrubbing.

At completion of scrubbing, remove the specimen from the testing device and rinse it thoroughly with warm (approximately 40 °C ± 3 °C) water (4.7), then dry the specimen by laying on a horizontal surface at a temperature not exceeding 60 °C.

Clean the brush by removing any fibre, yarn or thread and any soap or detergent solution on the tufts before the next test. The brush should be examined before use and replaced if excessively worn.

Assess the change in colour of the test specimen with the grey scale (4.6) after conditioning, according to ISO 105-A02.

7 Test report

The test report shall include the following information:

a) reference to this part of ISO 105, i.e. ISO 105-C07;

b) details of the sample tested;

c) which soap or detergent solution was used;

d) the brush used, if different from that described in 4.2;

e) the number of scrubs used;

f) the temperature selected;

g) the make and model number, if available, of the testing device;

h) the numerical rating for change in colour of the test specimen.

NATIONAL ANNEX A

(National Foreword)

COMMITTEE COMPOSITION

Chemical Methods of Test Sectional Committee, TXD 05

Organization	*Representative(s)*
Textiles Committee, Mumbai	Dr G. S. Nadigar (***Chairman***) Shri E. Vishambharam (*Alternate*)
Ahmedabad Textile Industry's Research Association, Ahmedabad	Representative
Bapuji Institute of Engineering & Technology, Davangere	Dr H. L. Vijayakumar Dr K. Murugesh Babu (*Alternate*)
Central Institute for Research on Cotton Technology, Mumbai	Dr (Miss) C. R. Raje Dr R. H. Balasubramanya (*Alternate*)
Central Pollution Control Board, Delhi	Dr M. Q. Ansari Shri Ajay Aggarwal (*Alternate*)
Clariant (India) Ltd, Mumbai	Dr V. G. Nayak
Directorate of Standardization, Department of Defence Production and Supplies, New Delhi	Lt Col (Dr) R. Shrivastava Lt Cdr B. Manjunath (*Alternate*)
Indian Institute of Carpet Technology, Bhadohi (U.P.)	Prof (Dr) K. K. Goswami Shrimati Betty Das Gupta (*Alternate*)
Indian Jute Industries' Research Association, Kolkata	Shri N. C. Som
Jayshree Textiles, Rishra	Shri Abhey Nair Shri Pawan Sharma (*Alternate*)
L. N. Chemical Industries, Mumbai	Shri Ketan L. Gandhi
Maniklal Verma Textile Institute, Bhilwara	Dr N. K. Mathur
Man-Made Textile Research Association, Surat	Dr Sandeep R. Naik Shri M. G. Patel (*Alternate*)
Ministry of Defence (DGQA), New Delhi	Shri P. P. Naidu Shri Rama Yadav (*Alternate*)
Ministry of Defence (R&D), New Delhi	Shri S. C. Jain
Office of the Textile Commissioner, Mumbai	Shri R. A. Lal
Rajasthan Spinning & Weaving Mills Ltd, Bhilwara	Maj Gen V. Badhwar Shri Vijay Yadav (*Alternate*)
Reliance Industries Ltd, Mumbai	Shri P. K. Badami Shri Sanjeev Israni (*Alternate*)
SNDT Women's University, Mumbai	Dr (Ms) Bharati A. Patwardhan
Suditi Industries Ltd, Navi Mumbai	Shri R. Chinraj Shri Rajendra Gaikwad (*Alternate*)
Sunil Industries Ltd, Mumbai	Shri Vinod G. Lath Shri Ramesh Khanna (*Alternate*)
Textiles & Engineering Institute, Ichalkaranji, District Kohlapur	Prof S. K. Laga Prof S.S.Chinchwade (*Alternate*)

Organization	*Representative(s)*
The Bombay Millowners' Association, Mumbai	Shri Mahesh Sharma
The Bombay Textile Research Association, Mumbai	Shri A. V. Affini Shri B. S. Acharya (*Alternate*)
The South India Textile Research Association, Coimbatore	Representative
The Synthetics & Art Silk Mills' Research Association, Mumbai	Shri K. S. Taraporewala Shri D. L. Shah (*Alternate*)
Tex-n-Lab, Thane	Shri Ullas Nimkar Shri S. Vardarajan (*Alternate*)
Veermata Jijabai Technological Institute, Mumbai	Prof K. D. Gawand
Wool Research Association, Mumbai	Shrimati G. P. Rane Shri V. C. Panse (*Alternate*)
In personal capacity (*2, Shri Sidhi Vinayak Co-operative Housing Society, Swantra Veer Savarkar Marg, Worli, Mumbai*)	Shri M. D. Dixit
BIS Directorate General	Shri M. S. Verma, Director and Head (Textiles) [Representing Director General (*Ex-officio*)]

Member Secretary
Shri M. S. Verma
Director and Head (Textiles), BIS

(*Continued from second cover*)

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 105-C06 : 1994 Textiles — Tests for colour fastness — Part C06: Colour fastness to domestic and commercial laundering	IS/ISO 105-C06 : 1994 Textiles — Tests for colour fastness: Part C06 Colour fastness to domestic and commercial laundering	Identical
ISO 105-C10 : 2006 Textiles — Tests for colour fastness — Part C10: Colour fastness to washing with soap or soap and soda	IS/ISO 105-C10 : 2006 Textiles — Tests for colour fastness: Part C10 Colour fastness to washing with soap	do

The composition of the Committee responsible for the formulation of this standard is given in National Annex A.

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc No.: TXD 05 (0809).

Amendments Issued Since Publication

Amendment No.	Date of Issue	Text Affected

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